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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,237	09/09/2004	Emilio A. Emini	21051YP	2340

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EXAMINER	
BLUMEL, BENJAMIN P	

ART UNIT	PAPER NUMBER
1648	

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06/25/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/507,237	EMINI ET AL.	
	Examiner	Art Unit	
	Benjamin P. Blumel	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) *3,4,15,16,25 and 26* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-14,17-24 and 27-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/16/05 & 3/29/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election of the required species in the reply filed on May 4, 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 3, 4, 15, 16, 25 and 26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on May 4, 2007.

Information Disclosure Statement

The information disclosure statements (IDS) submitted on March 16, 2005 and March 29, 2006 were filed. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Continuity Data

Applicants are asked to update the first line of the specification with regard to all priority claims.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection

is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 10, 14, 21, 22 and 24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 6, 8 and 15 of copending Application No. 10/571,651. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed invention of the copending application anticipates the claimed invention of the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1 and 2 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 3 and 6 of copending Application No. 11/604,553. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed invention of the copending application anticipates the claimed invention of the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 5-14 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evans R. (US 2007/0092526 A1), Emini et al. (US 6,733,993 B2) and Gregory et al. (US 5,932,210).

One of the applied references has common inventors and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference

was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

The claimed invention is drawn to a method for inducing an enhanced immunological immune response against HIV-1 gag antigen by immunizing a mammal with a recombinant adenoviral vector of serotype 5 (Ad5) that expresses the HIV antigen followed by a boosting immunization of a recombinant adenoviral vector of serotype 6 (Ad6) that expresses the same antigen. In both adenovirus vectors, the E1 gene is inactivated by deleting the genome of Ad5 from base pairs 451-3510 and base pairs 451-3507 of Ad6. The modification of the HIV *gag* antigen with codons optimized for expression in a human, the claimed bovine hormone polyadenylation (polyA) and transcription termination sequence, or the use of a human CMV IE promoter.

Evans teaches the prime-boost vaccination method against various viral pathogens, such as HIV *gag*, by expressing an antigen of interest in recombinant adenoviruses. Evans discusses that during the prime-boost vaccination, different serotypes of adenoviruses can be employed as therapeutic vectors. In addition, Evans teaches the use of replication defective adenoviruses, but

Evans does not teach the specific alteration of alternate adenovirus serotypes by inactivating E1 by deleting Ad5 or Ad6 genome at base pairs 451-3510 or 451-3507, respectively, the modification of the HIV *gag* antigen with codons optimized for expression in a human, the claimed bovine hormone polyadenylation (polyA) and transcription termination sequence, or the use of a human CMV IE promoter.

Emini et al. teach the creation of a recombinant Ad5 that lacks the genomic region between base pairs 451-3510, the specific human CMV IE promoter and optimized codons of the HIV *gag* antigen for expression in a human. Emini et al. also teach the use of a bovine hormone polyadenylation and transcription termination sequence in the recombinant Ad5.

Gregory et al. teach to inactivate the E1 gene of Adenovirus serotypes 5 and 6 by deleting a 500-700 base pair region of the gene. Alternatively, Gregory et al. also teach the deletion of nucleotide 357-4020 in order to inactivate E1a and E1b, thereby generating replication incompetent adenoviruses with a severely attenuated phenotype.

It would have been obvious to one of ordinary skill in the art to modify the methods taught by Evans in order to vaccinate a host with a recombinant Ad5 expressing HIV *gag* protein followed by a recombinant Ad6 that also expressing the HIV *gag*, both with optimized codons, which is controlled by a human CMV IE promoter, thereby inducing an enhanced immune response to HIV *gag*. One would have been motivated to do so, given the suggestion by Evans that the method use different serotypes of replication deficient adenoviruses in order to induce an immune response to HIV-1 *gag*. There would have been a reasonable expectation of success, given the knowledge that Ad5 has been engineered by deleting base pairs 451-3510, and also expressing codons optimized HIV *gag*, which is controlled by a human CMV IE and also

contains a bovine hormone polyA and transcription termination sequences, as taught by Emini et al., and also given the knowledge that Ad5 and Ad6 are related adenoviruses and that deletion of a portion or the entire E1 region of adenoviruses 5 and 6 renders them replication deficient, as taught by Gregory et al. Thus the invention as a whole was clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Claims 22-24 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evans *supra,* Emini et al. (US 6,733,993 B2) and Bout et al. (US 6,913,922 B1).

One of the applied references has common inventors and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

The claimed invention is drawn to a method for inducing an enhanced immunological immune response against HIV-1 gag antigen by immunizing a mammal with a recombinant adenoviral vector of serotype 5 (Ad5) that expresses the HIV antigen followed by a boosting immunization of a recombinant adenoviral vector of serotype 35 (Ad35) that expresses the same antigen. The modification of the HIV *gag* antigen with codons optimized for expression in a human, the claimed bovine hormone polyadenylation (polyA) and transcription termination sequence, or the use of a human CMV IE promoter without introns.

Evans teaches the prime-boost vaccination method against various viral pathogens, such as HIV *gag*, by expressing an antigen of interest in recombinant adenoviruses. Evans discusses that during the prime-boost vaccination, different serotypes of adenoviruses can be employed as therapeutic vectors. In addition, Evans teaches the use of replication defective adenoviruses, but Evans does not teach the specific alteration of alternate adenovirus serotypes by inactivating E1 of Ad5 and Ad35, the modification of the HIV *gag* antigen with codons optimized for expression in a human, the claimed bovine hormone polyadenylation (polyA) and transcription termination sequence, or the use of a human CMV IE promoter.

Emini et al. teach the creation of a recombinant Ad5 that lacks the genomic region between base pairs 451-3510, the specific human CMV IE promoter and optimized codons of the HIV *gag* antigen for expression in a human. Emini et al. also teach the use of a bovine hormone polyadenylation and transcription termination sequence in the recombinant Ad5.

Bout et al. teach the use of Ad35 as a therapeutic agent in gene therapy. Specifically, Bout et al. teach the deletion of E1 in adenoviruses results in a replication defective virus and also provides space within the genome of the virus for insertion of heterologous sequences.

These sequences could pertain to either therapeutic agents (cytokines) or pathogens (viral antigens). Bout et al. teach that Ad35 provides for an alternate vector that may evade humoral immune responses since it differs from the common adenoviruses that most humans have already encountered.

It would have been obvious to one of ordinary skill in the art to modify the methods taught by Evans in order to vaccinate a host with a recombinant Ad5 expressing HIV *gag* protein followed by a recombinant Ad35 that also expresses the HIV *gag*, both with optimized codons, which is controlled by a human CMV IE promoter, thereby inducing an enhanced immune response to HIV *gag*. One would have been motivated to do so, given the suggestion by Evans that a prime-boost method use different serotypes of replication deficient adenoviruses in order to induce an immune response to HIV-1 *gag*. There would have been a reasonable expectation of success, given the knowledge that Ad5 has been engineered by deleting base pairs 451-3510, and also expressing codons optimized HIV *gag*, which is controlled by a human CMV IE and also contains a bovine hormone polyA and transcription termination sequences, as taught by Emini et al., and also given the knowledge that deletions of the E1 gene of adenoviruses results in replication incompetent viruses and that Ad35 represents an additional adenovirus therapeutic vector capable of expressing heterologous genes that are inserted in place of the deleted E1 region, as taught by Bout et al. Thus the invention as a whole was clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, 5-14, 17-24 and 27-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claimed invention recites "A method for inducing an enhanced immunological response against an HIV-1 *gag* protein…", however it is unclear what the "enhanced immunological response" is compared to in order to claim that it the immune response is enhanced by administering the two difference viral vectors in a prime-boost method.

Summary

No claims are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin P. Blumel whose telephone number is 571-272-4960. The examiner can normally be reached on M-F, 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campell can be reached on 571-272-1600. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Benjamin P Blumel/
Examiner
Art Unit 1648

BRUCE R. CAMPELL, PH.D
SUPERVISORY PATENT EXAMINER
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